

FIG. 1

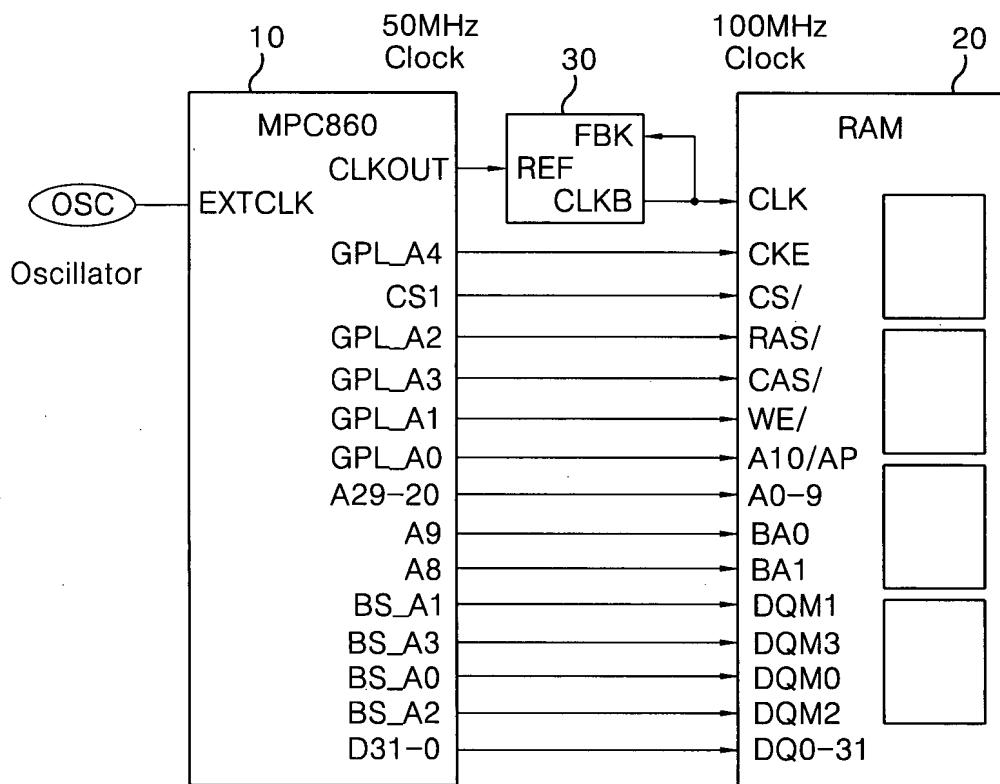


FIG. 2

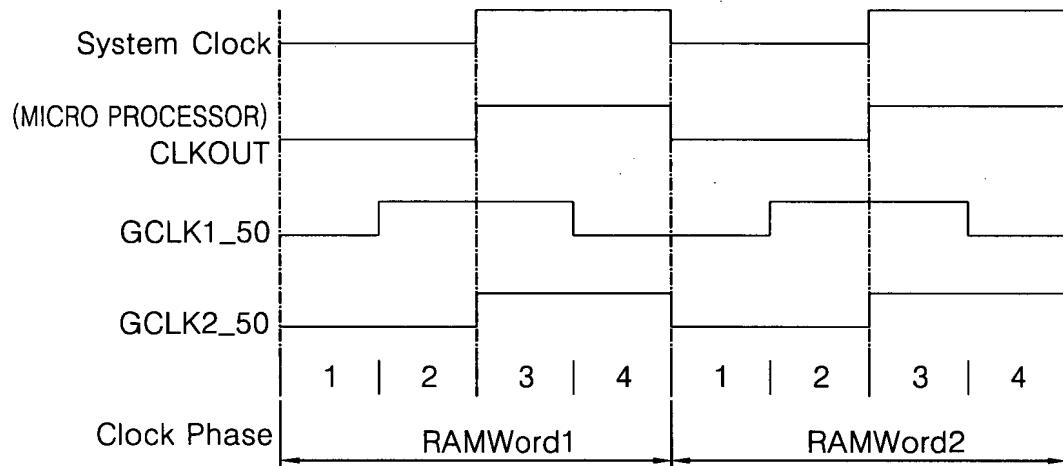


FIG. 3

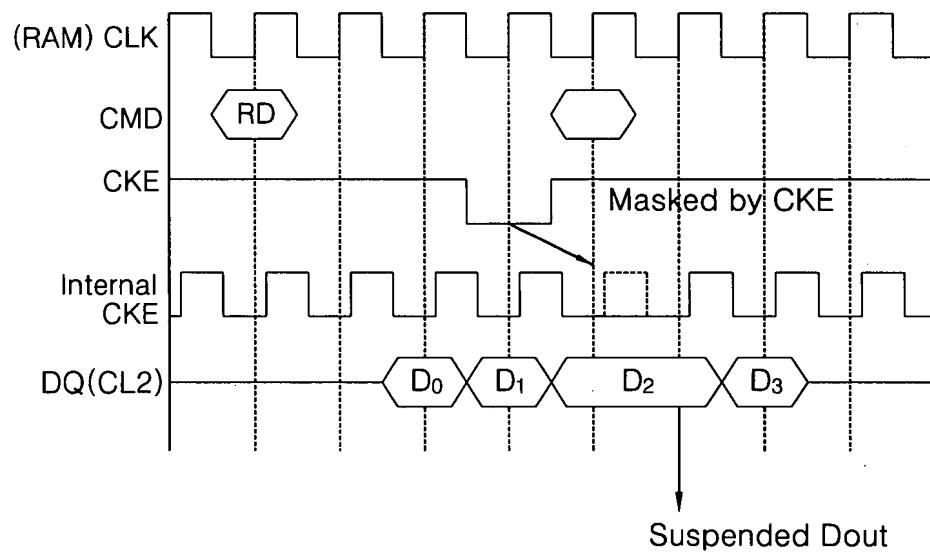


FIG. 4

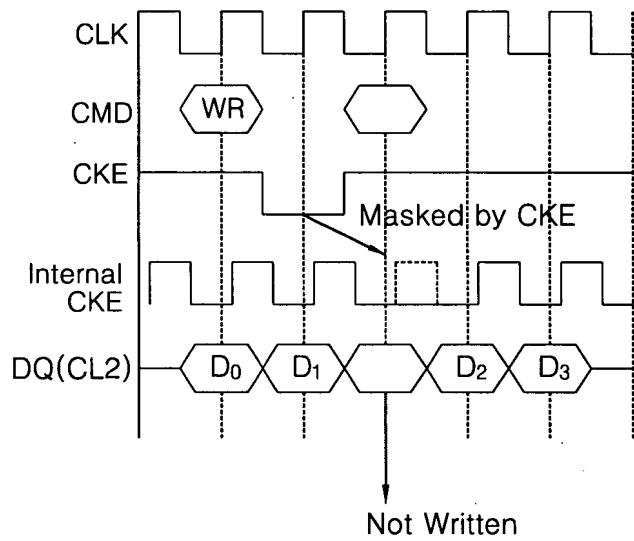


FIG. 5

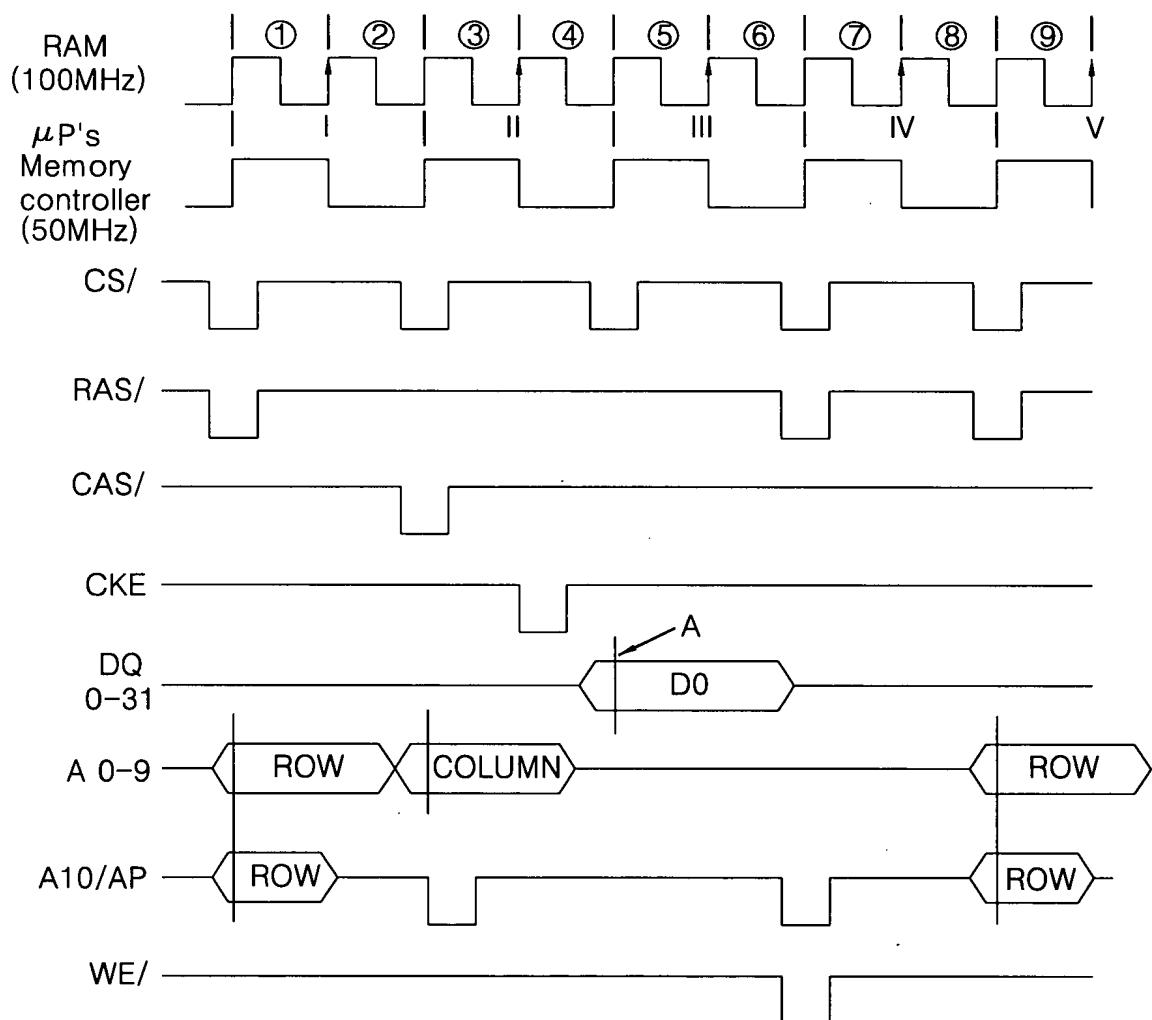


FIG. 6

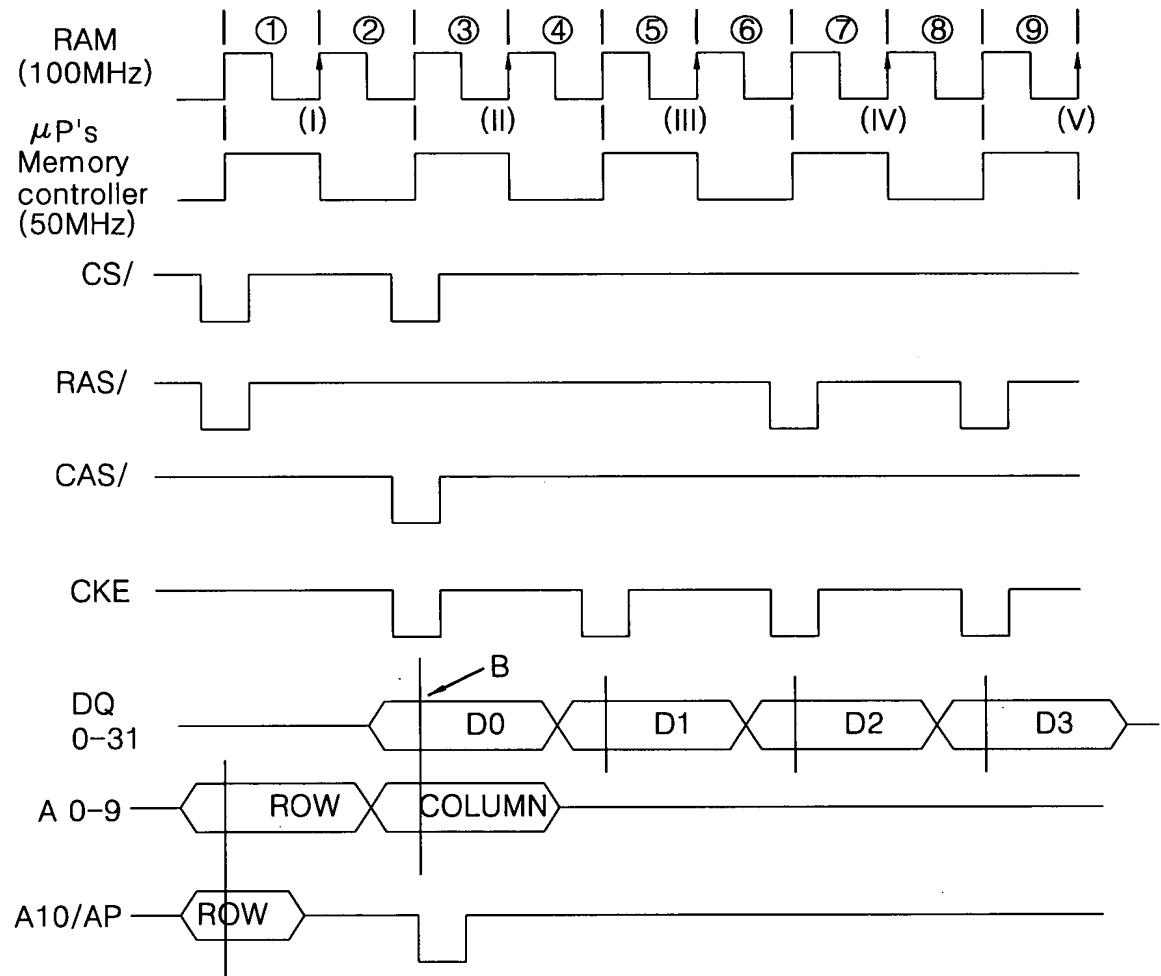


FIG. 7

THE RELATED ART METHOD			2:1 METHOD ACCORDING TO THE INVENTION			IMPROVEMENT OF PERFORMANCE	
CASE OF PAGE HIT	SDRAM LATENCY	TOTAL LATENCY TO TRANSFER DATA	SDRAM BANDWIDTH	TOTAL LATENCY TO TRANSFER	MAX BANDWIDTH	ACCESS TIME (2:1 METHOD/ THE RELATED ART METHOD)	MAX BANDWIDTH IMPROVEMENT (%)
CASE OF "NORMAL" PAGE MISS	SINGLE READ CL=2	2 4B/20ns= 200MB/s	SDRAM CL=1	TOTAL LATENCY TO TRANSFER 1 4B/10ns= 400MB/s	MAX BANDWIDTH 1/2	ACCESS TIME 1/2 (2:1 METHOD/ THE RELATED ART METHOD)	MAX BANDWIDTH IMPROVEMENT (%) 100%
CASE OF "NORMAL" PAGE MISS	BURST READ CL=2	5 16B/50ns= 320MB/s	CL=1	4 16B/40ns= 400MB/s	1/2	1/2	25%
CASE OF "NORMAL" PAGE MISS	SINGLE READ RCD+ CL=4	4 4B/40ns= 100MB/s	RCD+ CL=2	2 4B/20ns= 200MB/s	1/2	1/2	100%
	BURST READ RCD+ CL=4	7 16B/70ns= 229MB/s	RCD+ CL=2	5 16B/50ns= 320MB/s	1/2	1/2	40%
CASE OF PAGE MISS	SINGLE READ RP+ RCD+ CL=6	6 4B/60ns= 67MB/s	RP+ RCD+ CL=3	3 4B/30ns= 133MB/s	1/2	1/2	100%
	BURST READ RP+ RCD+ CL=6	9 16B/90ns= 177MB/s	RP+ RCD+ CL=3	6 16B/60ns= 266MB/s	1/2	1/2	50%